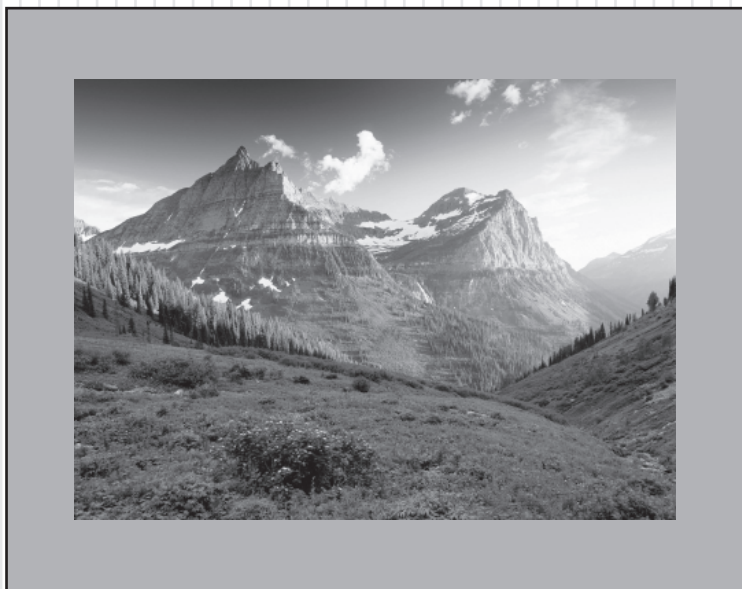


Montana
Comprehensive Assessment
System (MontCAS, Phase 2)
Criterion-Referenced Test (CRT)

COMMON CONSTRUCTED-RESPONSE ITEM RELEASE
MATHEMATICS, GRADE 5

2007



OFFICE OF PUBLIC INSTRUCTION

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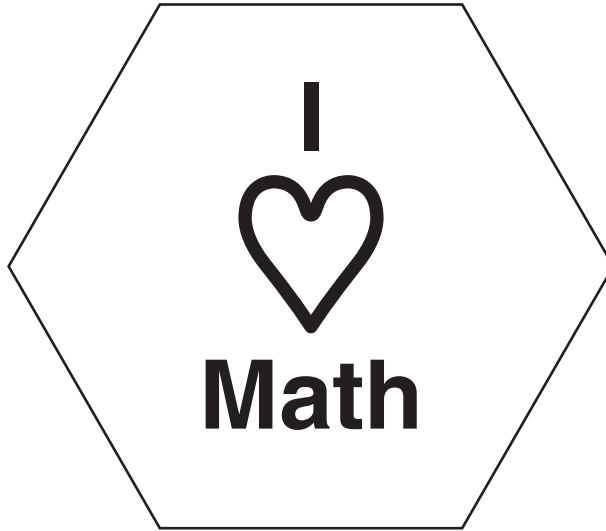
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Mathematics

Session 1 (Calculator)

You may use a calculator during this session.

25. Ms. Taylor is preparing a project for her students. The students will be making buttons of the size and shape of the pattern shown below.



- What is the length of one side of the button in centimeters?
- How many centimeters of ribbon are needed to go along all sides of this button? Show or explain how you found your answer.
- Ms. Taylor is making 200 buttons. How many centimeters of ribbon does she need?

Scoring Guide

Score	Description
4	4 points
3	3 points
2	2 points
1	1 point OR Student shows minimal understanding of the problem
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Scoring Notes

- Part a: 1 point for correct length, **4 (centimeters)**
- Part b: 2 points for correctly calculating perimeter, **24 (centimeters) or correct based on incorrect part a**, and work shown or explanation given
- OR
- 1 point for correct answer with incomplete or no work shown or explanation given
or
for correct strategy that may have one computation error
- Part c: 1 point for correct number of centimeters, **4800 (cm) or correct answer based on incorrect part b**

Sample responses:

Part a: 4 centimeters

Part b: $4 \times 6 = 24$

Part c: 4800

Score Point 4

Sample 1

A. The length of one side of the button is 4cm.

B $\frac{4 \text{ cm}}{16 \text{ sides}} = 24 \text{ cm}$ I got my answer by multiplying how many centimeters is each side and how many sides are there.

C. $\frac{24 \text{ cm all the sides}}{200 \text{ sides}} = 4,800 \text{ cm. of ribbon}$

I got my answer by multiplying how many buttons Ms. Taylor is going to make and how many centimeters is each side.



Score Point 4

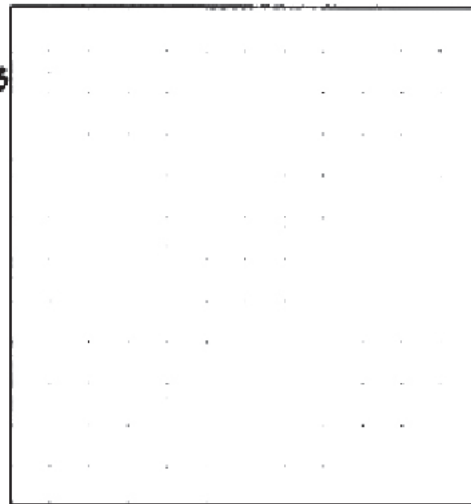
Sample 2

A. 4 centimeters



B. 24 centimeters of ribbon. I found my answer by multiplying 4 and 6 equaling 24. $4 \times 6 = 24$

C. 4,800 centimeters of ribbon



Score Point 3

Sample 1

A = 4 centimeters

B = 4

$\times 6$
24 centimeters of ribbon

C = 200

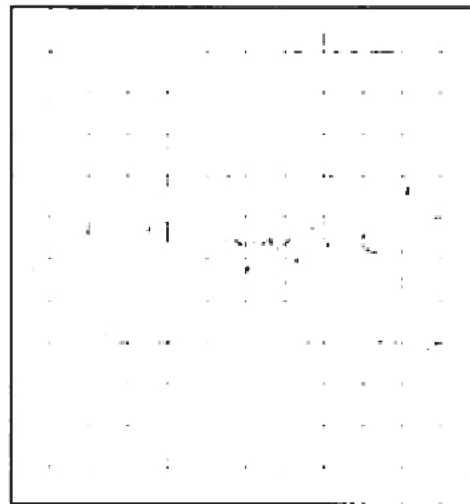
$\times 24$

800

+ 400

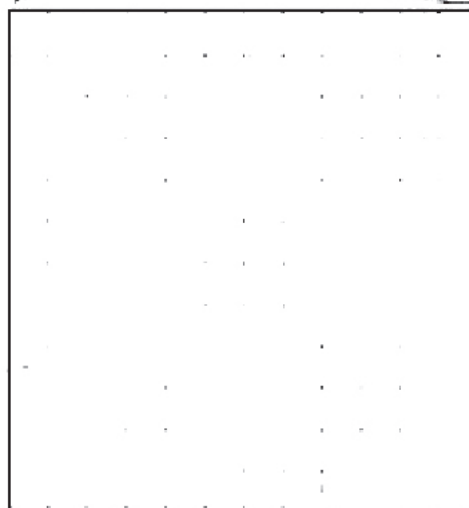
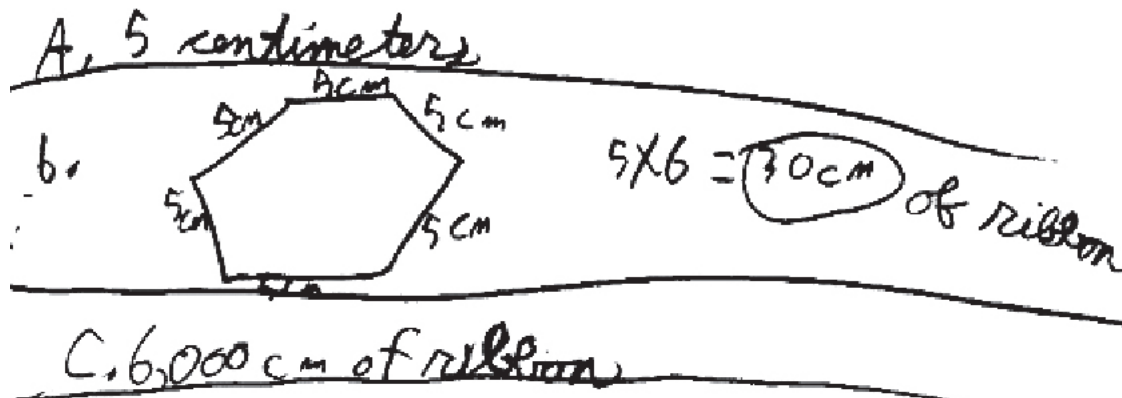
1200

centimeters of ribbon



Score Point 3

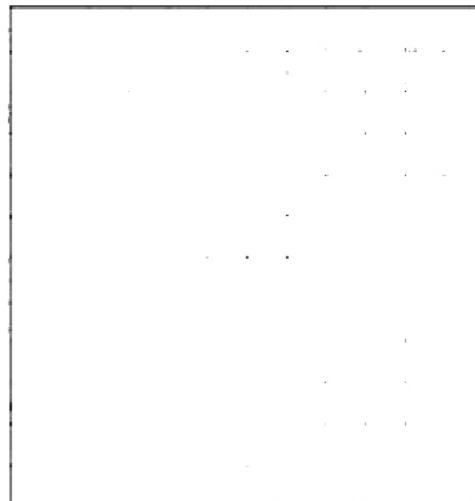
Sample 2



Score Point 2

Sample 1

A: The answer is about 4 inches.
B: 24 centimeters are needed
C: 80 centimeters of ribbon.



Score Point 2

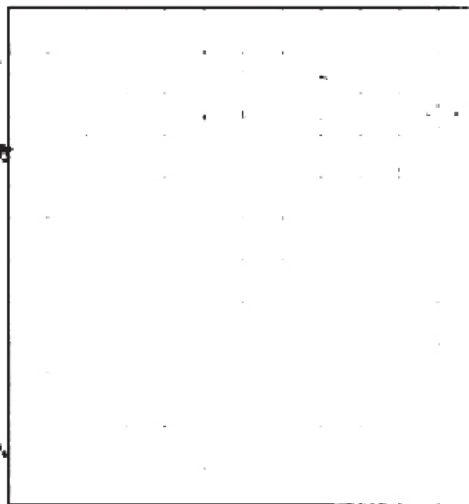
Sample 2

The length of one side of a button in centimeters is 4 centimeters.

$$\begin{array}{r} 4 \\ \times 4 \\ \hline 16 \end{array}$$
 You need 16 centimeters of ribbon.
I got my answer by using centimeters

I got 4. Then I multiplied 4 by 4 and got 16 centimeters of ribbon.

$$\begin{array}{r} 200 \\ \times 16 \\ \hline 1200 \\ + 2000 \\ \hline 3,200 \end{array}$$
 Centimeters of ribbon.



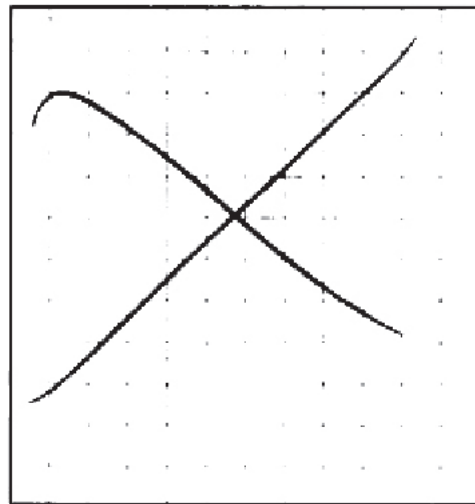
Score Point 1

Sample 1

A 3 cenometers

B 24 cenometers

C 204 Cenometers



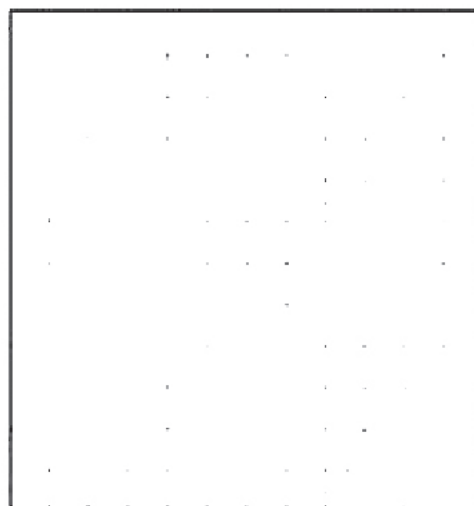
Score Point 1

Sample 2

A) $7\frac{1}{2}$ cm

B) 4 cm

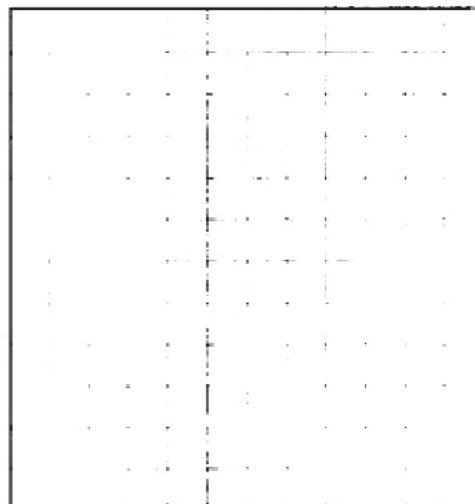
C) 800 cm



Score Point 0

Sample 1

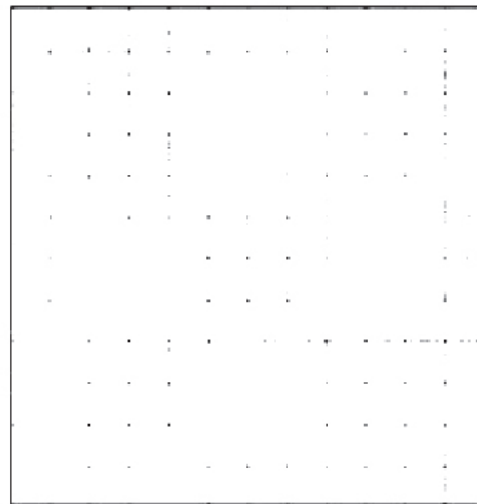
- a. 7 centimeters.
- b. Measure all around the shape.
- c. 4,000 centimeters.



Score Point 0

Sample 2

A. because 10 millimeters = 1 centimeter
so she would need 10 buttons.



Mathematics

Session 3 (No Calculator)

You may NOT use a calculator during this session.

68. Manny and Alex each made a greeting card for an art project. Each boy started with the same size paper. Manny used $\frac{3}{5}$ of his paper for his card. Alex used $\frac{1}{2}$ of his paper for his card.
- a. In your Student Response Booklet, make two copies of the picture below of a piece of paper. Mark each picture to show the part of the paper that each boy used.



- b. Use a fraction to tell how much MORE of his sheet of paper Manny used than Alex used of his. Show or explain how you found your answer.
- c. Could the boys have made both of their cards from a single piece of paper? If so, show what fraction of the piece of paper would be left over. If not, explain why not. Use pictures, words, or numbers to show how you found your answer.

Scoring Guide

Score	Description
4	5 points
3	4 points
2	2–3 points
1	1 point OR Minimal understanding of representing and/or comparing fractional quantities
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Scoring Notes

Part a: (2 points total)

1 point for each correct fraction model

Part b: 2 points for correct answer, $\frac{1}{10}$, with correct explanation or work shown

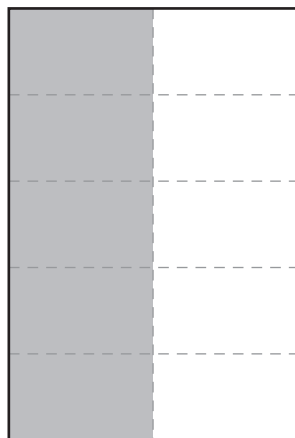
OR

1 point for correct answer with incomplete or no explanation or work shown
or
correct strategy that may have one computational error

Part c: 1 point for correct answer, **no**, with correct explanation or work shown

Sample Responses:

Part a: Accept any model that correctly shows $\frac{3}{5}$ and/or $\frac{1}{2}$. Some examples are:



Part b: $\frac{3}{5} - \frac{1}{2} = \frac{6}{10} - \frac{5}{10} = \frac{1}{10}$

Part c: Accept any explanation or work that has correct strategy for adding fractions and comparing to the whole sheet of paper. An example is:

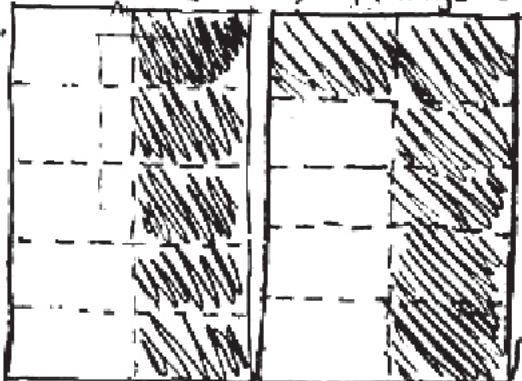
$$\frac{3}{2} + \frac{1}{2} = \frac{6}{10} + \frac{5}{10} = \frac{11}{10}; \frac{11}{10} > \frac{10}{10}$$

No, because their two parts together is greater than 1.

Score Point 4

Sample 1

a. Alex's ($\frac{1}{2}$ used) Manny's ($\frac{2}{3}$ used)



b. Alex used $\frac{1}{2} \times 5 = \frac{5}{10}$
Manny used $\frac{2}{3} \times 2 = \frac{4}{3}$

$$\begin{array}{r} \frac{5}{10} \\ - \frac{4}{3} \\ \hline \end{array}$$

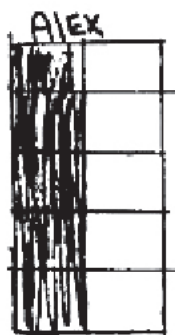
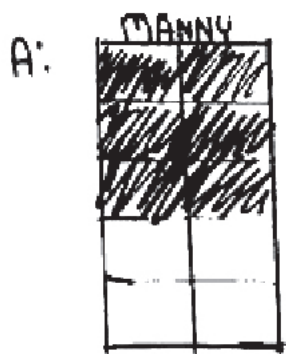
To find the difference between the answers you must first find the same denominator. This denominator should be ten because the paper is divided into ten pieces. So, you times $\frac{1}{2}$ by 5 on the top and bottom. Then you time $\frac{2}{3}$ by 2 on the top and bottom. Then you subtract $\frac{4}{3}$ from $\frac{5}{10}$ and it should give you the difference

c. The boys couldn't have made their cards from the same piece of paper because $\frac{1}{2}$ plus $\frac{2}{3} = \frac{7}{6}$ which is an improper fraction so you can change it to a mixed number. Then it would equal $1\frac{1}{6}$ which means it is 1 whole piece of paper PLUS $\frac{1}{6}$ of another piece of paper.

$\frac{1}{2} = \frac{5}{10} - \frac{5}{10}$ means it is 1 whole piece of paper PLUS $\frac{1}{6}$ of another piece of paper.

Score Point 4

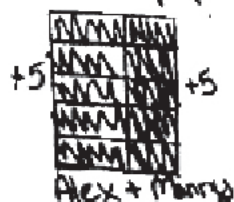
Sample 2



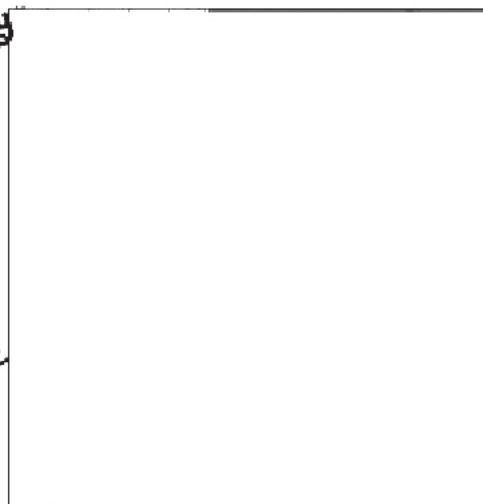
B: $\frac{1}{2} = \frac{5}{10}$ $\frac{3}{5} = \frac{6}{10}$

Manny used $\frac{1}{2}$ more than Alex, to get this answer first I, changed $\frac{1}{2}$ into $\frac{5}{10}$. Next I, equalized $\frac{3}{5}$ to $\frac{6}{10}$. Which turned into $\frac{6}{10} - \frac{5}{10} = \frac{1}{10}$ is $\frac{1}{10}$ more than $\frac{5}{10}$.

C: No, they could not because they would need one more square on their paper. For Example:



They are going to need 1 more piece of paper or perhaps a bigger piece of paper to combine their cards.



Score Point 3

Sample 1



B. Manny used $\frac{1}{10}$ of his sheet more than Alex sheet

C. No they couldn't make a card out of one sheet of paper because Mannys would've needed one more part of a single sheet of paper.

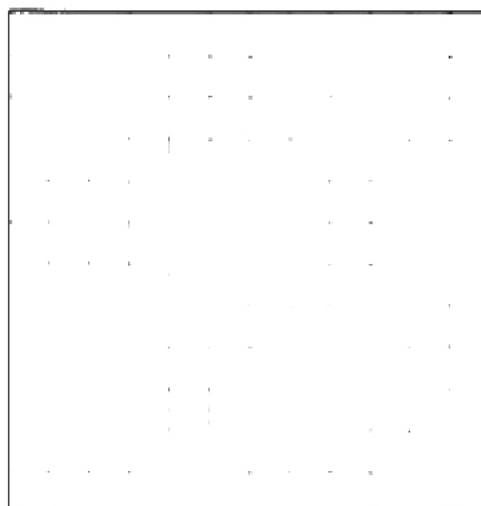
Score Point 3

Sample 2



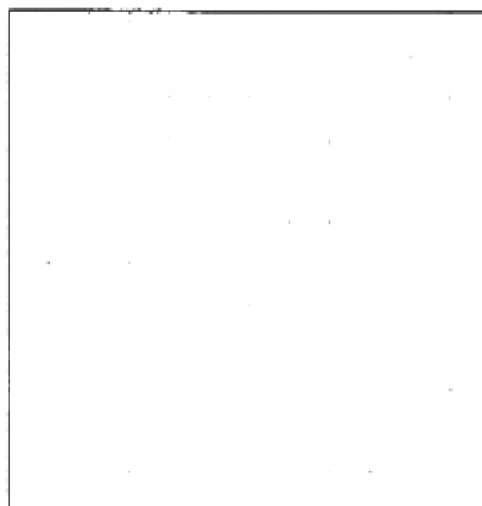
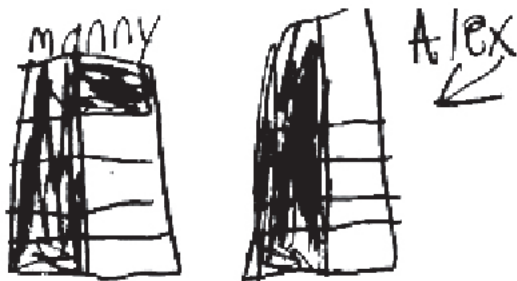
C. No, because all the left over space was only 9 spaces and you need 10 equal parts and because the both used more than $\frac{1}{2}$

B. Manny used $\frac{1}{10}$ more of his paper than Alex because Manny used $\frac{6}{10}$ Alex used $\frac{5}{10}$



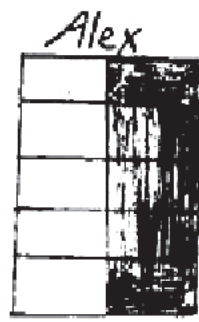
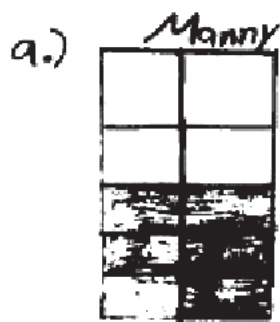
Score Point 2

Sample 1



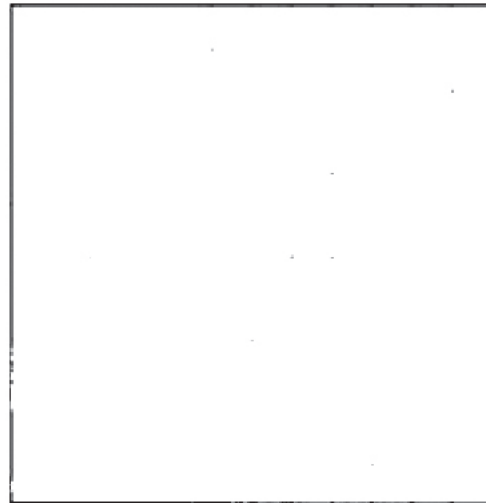
Score Point 2

Sample 2



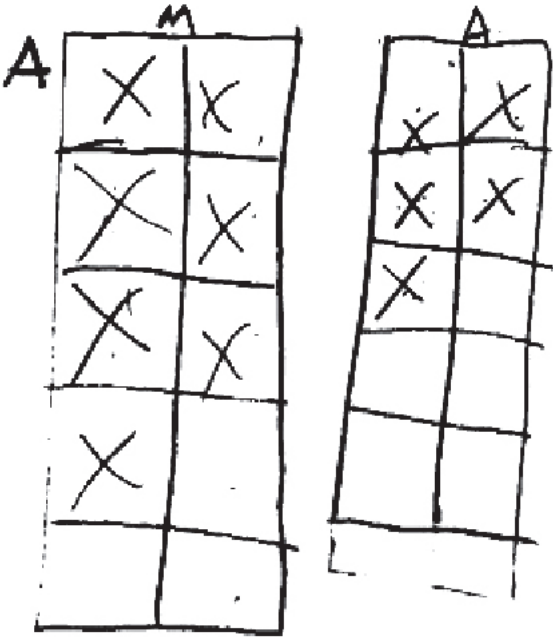
b.) $\frac{3}{5} > \frac{1}{5}$
Because if you stack
the boxes the same
way you can see
Manny's has more.

c.) No. If you put it
together into one piece
this is what it would
look like.



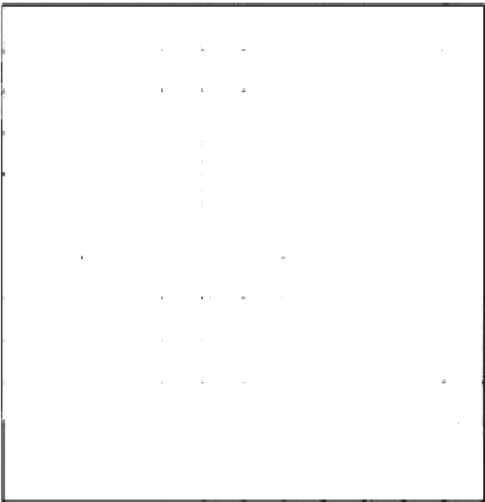
Score Point 1

Sample 1



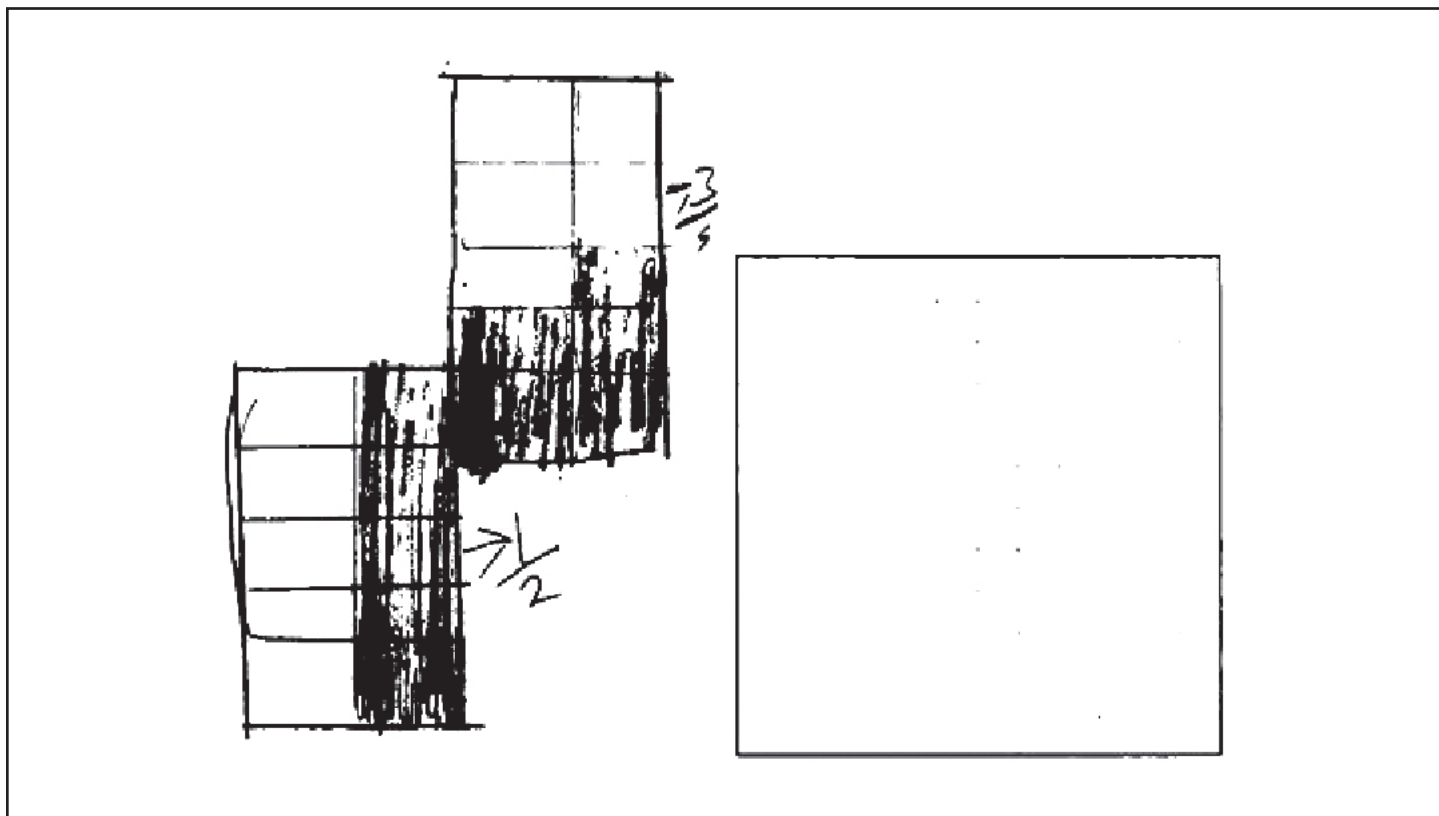
B. $\frac{3}{5}$ more than $\frac{1}{2}$

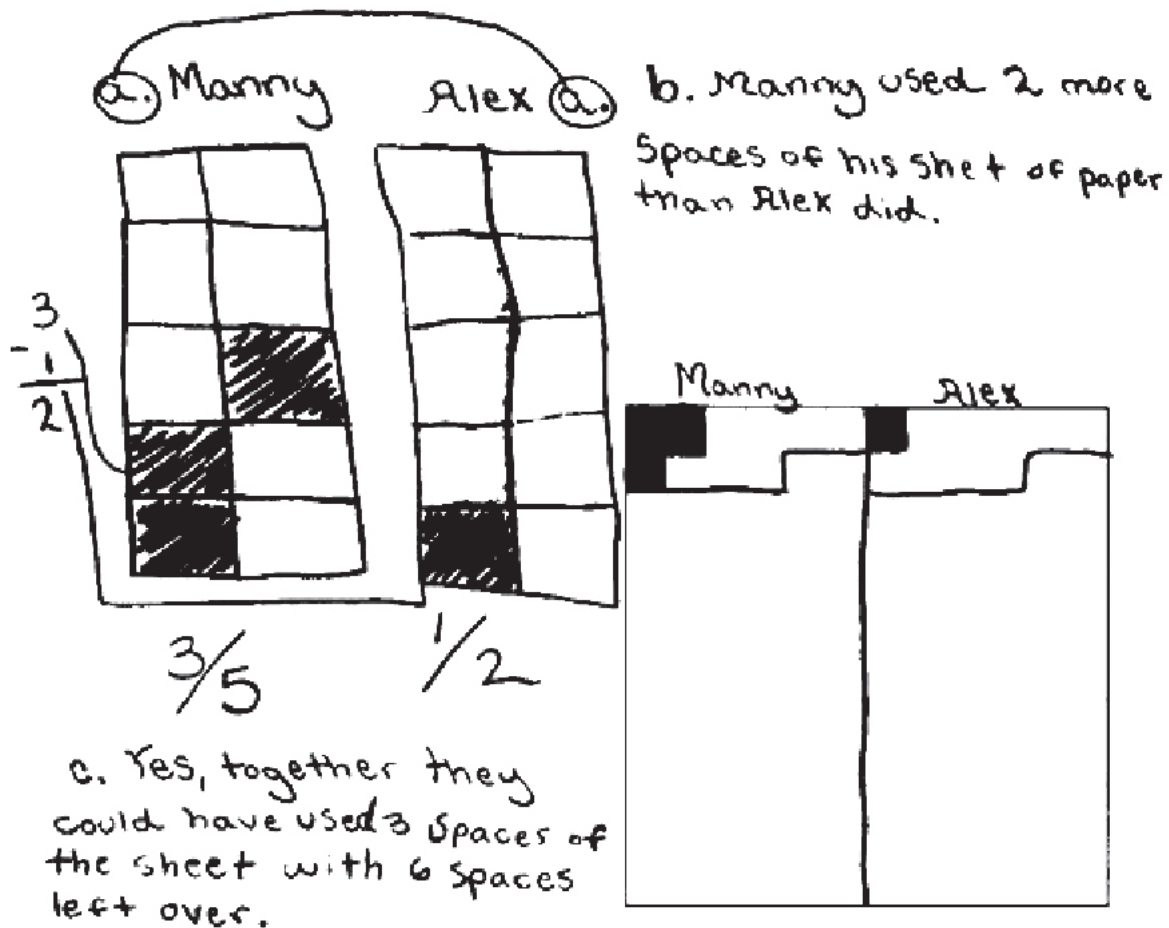
$\frac{1}{10}$



Score Point 1

Sample 2





⑥

1
2

⑦ Yes because
Alex used $\frac{1}{2}$
so Manny could've
used the other
 $\frac{1}{2}$.

